

In the Drawings:

Please find the attached a "New Sheet" showing Figure 3A. This sheet is submitted in response to the Examiner's objection under 1.83(a), as explained in more detail below.

Attachments: New Sheet Number (8).

REMARKS

The Office Action of February 18, 2005 has been reviewed and the comments therein were carefully considered. Through this amendment claims 1, 2, 12, 19, 26 and 28 have been amended and claims 3-7 have been canceled. No new matter has been added. As explained in more detail below, Applicant submits that all claims are now in condition for allowance and respectfully request such action.

Information Disclosure Statement

Applicant notes that an Information Disclosure Statement based on an International Search Report was filed in the current application on January 19, 2005. The current Office Action does not acknowledge receipt of the Information Disclosure Statement. Applicant requests confirmation that the filed Information Disclosure Statement was received and considered.

Objection to the Drawings

The drawings are objected to under 37 CFR 1.83(a). More specifically, the Office Action indicates the feature "microphone cartridges placed back to back" is not shown in the submitted drawings. Applicant has submitted a New Sheet according to 37 C.F.R. 1.121(d). The New Sheet, entitled "Figure 3A" shows the grille, base and internals of the dual cartridge microphone according to an embodiment of the present invention, wherein microphone cartridges 340 and 350 are positioned "back to back." The new figure is not considered new matter because the placement and exemplary utility of "back to back" directional microphones was fully described in the original application. (See, e.g., paragraph 35). Paragraphs 17 and 35 of the specification have been amended to reflect the addition of Figure 3A. In view of the above remarks and submission of the New Sheet showing the claimed feature, Applicant respectfully requests reconsideration and withdrawal of the objection.

Claim Rejections Under 35 USC §112, first paragraph

Claims 26 and 27 are rejected under 35 USC §112, first paragraph as allegedly failing to comply with the enablement requirement.

The Office Action asserts the element “microphone cartridges placed back to back” lacks disclosure in the specification of how the arrangement can be achieved because “the microphone cartridges and their mounting are pre-arranged in a specific mounting according to Figure 3.” As set forth in the specification, Figure 3 is a dual cartridge microphone according to an embodiment of the present invention. (See paragraphs 17 and 30-35). As one skilled in the art will appreciate, the angle and placement of the microphones within the housing may be adjusted. Indeed, as set forth in the specification, in another embodiment of the invention, back-to-back directional microphone cartridges may be employed within a single housing to derive an omni-directional pattern via electrical summing of the two directional microphone signals, thus providing both a directional pattern suitable for speech and a combined omni-directional pattern suitable for ambient noise sensing. (see paragraph 35). The Applicant, therefore, respectfully requests reconsideration and withdrawal of this rejection.

Claim Rejections Under 35 USC §102

Claims 1–8, 10-12, 14–19, 26–29 are rejected under 35 USC §102(b) as allegedly being anticipated by U.S. Patent No. 6,061,456 to Andrea, et al (“the ‘456 patent”). In view of the amendments to claims 1, 2, 12, 19, 26 and 28 and the following Remarks, Applicant respectfully requests reconsideration and withdrawal of the rejection.

Andrea discloses a noise cancellation apparatus. The noise cancellation apparatus uses a first and a second microphone arranged at a predetermined angle with a subtraction apparatus. The first microphone detects speech in the form of a first signal and the second microphone detects background noise in the form of a second signal. The subtraction apparatus is used to subtract the second signal from the first signal to generate a single output.

In regards to currently amended claim 1, the ‘456 patent does not disclose, teach, or suggest the claimed features “the first preamplifier receiving the first electrical signal and generating a speech signal” and “the second preamplifier receiving the second electrical signal and generating a noise signal.” In contrast, to the claimed features, the directional microphone 12 and uni-directional microphone 14 of the ‘456 patent are both fed into an op-amp 16, which “subtracts the signal received from the second microphone 14 from that received from the first microphone 12, and outputs the resulting subtracted signal.” (Col. 16, lines 20-24; emphasis added). Therefore, in the

'456 reference a single output is produced from both the directional and omni-directional microphones and not independent outputs (speech signal and noise signal) as claimed. For instance, claim 1 includes the feature of "wherein the speech signal is used in a speech pickup application and the noise signal is used for loudspeaker volume compensation." Therefore, for at least this reason, it is respectfully submitted that independent claim 1 is allowable. Dependent claims 2, 8-11, and 30 which ultimately depend from independent claim 1 are allowable for at least the same reason as independent claim 1.

In regards to claim 12, the Office Action indicates the '456 patent teaches a dual cartridge microphone having a printed circuit board coupled to a first signal to produce a speech signal and a second signal to generate a noise signal. As indicated above, the '456 patent does not disclose two independent outputs from the directional and uni-directional microphones, respectively. To more clearly define this aspect of at least one embodiment of the invention, claim 12 has been amended to recite:

a printed circuit board contained within the housing, the printed circuit board including filtering and protection circuits, the filtering and protection circuits coupled to the first electrical signal to generate a speech signal, and the filtering and protection circuits coupled to the second electrical signal to generate a noise signal, whereby the speech signal and the noise signal are utilized independently. (Emphasis Added).

Indeed, support for the above features may be found in at least Paragraph 34 of the Specification which states:

[t]he directional microphone cartridge output may be used for applications that include hands-free cellular telephone communications or voice activated instrument control. The omni-directional microphone output may be used for automatic loudspeaker volume compensation and/or active noise control. For example, see U.S. Patents 5,615,270 issued on March 25, 1997, and U.S. 6,529,605 issued on March 4, 2003, the entire disclosures of both are hereby incorporated by reference. Additionally, the outputs of a the dual cartridge microphone can be used in algorithms for applications that automatically gate "on" and "off" a microphone in response to a speaker's voice being received from a particular direction of sound arrival relative to the microphone. One such algorithm is described by U.S. Patent 4,489,442 issued on 12/18/84, the entire disclosure of which is incorporated by reference. Figure 2F illustrates the connection points of each of the separate outputs as shown in socket 205.

Because the '456 patent discloses circuits and systems that subtract the signal received from the second microphone 14 from that received from the first microphone 12, and outputs the resulting subtracted signal, it cannot be said to disclose, teach, or suggest at least the claimed feature of "whereby the speech signal and the noise signal are utilized independently." Therefore, for at least this reason, it is respectfully submitted that independent claim 12 is allowable. Dependent claims 13-18, and 31 which ultimately depend from independent claim 1 are allowable for at least the same reason as independent claim 1.

Independent claims 19 and 26 have also been amended to more clearly indicate that the generated "speech signal and the noise signal are utilized independently." Moreover, independent claim 19 also includes the feature that the housing is mounted within the vehicle, which is not disclosed in Andrea. Therefore, for at least the above reasons, it is respectfully submitted that independent claims 19 and 26 are in condition for allowance. Dependent claims 20-25, and 27 which ultimately depend from either independent claim 19 or 26 are allowable for at least the same reason as independent claim 19 and 26.

Claim 28 stands rejected by the Office Action, however, no reasoning is provided in the Office Action for the rejection. More specifically, the Office Action does not set forth where each and every element of claim 28 is found in the '456 patent. However, Applicant has amended claim 28 to more particularly describe Applicant's invention. In particular, currently amended claim 28 now includes the claimed feature of "wherein the first signal is used in a speech pickup application and the second signal is used for loudspeaker volume compensation." Applicant respectfully submits that claim 28 is in condition for allowance. Dependent claim 29 which depends from claim 28 is allowable for at least the same reason as independent claim 28.

Claim Rejections Under 35 USC §103

Claims 20-25 are rejected under 35 USC §103(a) as being unpatentable in view of Andrew [sic, Andrea].¹

¹ The Office Action indicates claims 20-25 are rejected as "unpatentable over Andrew". The Applicant believes the Examiner is referring to U.S. Patent No. 6,061,456 to Andrea, et al ("the '456 patent"), however, no specific reference to a patent number was provided. If the Examiner is rejecting the claims under a different patent or reference, the Applicant respectfully requests clarification and the opportunity to respond to the rejection once the full citation is provided.

The Office Action alleges the '456 patent teaches the application of microphones in various environments. Without acquiescing to the Examiner's interpretation of the reference, claims 20-25 recite a dual cartridge microphone that is unique from the noise canceling apparatus disclosed in the '456 patent. Therefore, the use of the dual cartridge microphones of claims 20-25 cannot be obvious in view of the '456 patent. Indeed, combining the two references does not produce the embodiments recited in claims 20-25 or any other claim of the application. Moreover, the '456 patent does not teach, disclose, or otherwise suggest the use of a microphone mounted in a steering wheel, instrument panel, overhead counsel, or otherwise mounted in an automobile. The Applicant, therefore, respectfully traverses this rejection and respectfully requests withdrawal of the rejection.

Furthermore, for the reason submitted above with respect to claim 19, claims 20-35 are in condition for allowance. In particular, claims 20-25 which ultimately depend from independent claim 19 are allowable for at least the same reason as independent claim 19.

Claims 9, 13, 30-31 are rejected under 35 USC §103(a) as being unpatentable over Andrew [sic, Andrea]², in view of U.S. Patent No. 5,144,656 to Oku ("the '656 patent").

The Office Action asserts the '656 patent teaches a microphone having a socket and a wire harness. More specifically, the Examiner alleges it would have been obvious to one of ordinary skill in the art to modify the '456 patent with a socket and a wire harness as taught by the '656 patent. As discussed above in relation to the 35 U.S.C. §102 rejection under the '456 patent, claims 9, 13, 30-31 as presented, recite a dual cartridge microphone that is unique from the noise canceling apparatus of the '456 patent. Indeed, combining the '456 patent with the '656 still does not produce the microphone claimed in claims 9, 13, and 30-31. The Applicant, therefore, respectfully requests reconsideration and withdrawal of the rejection.

2. The Office Action indicates claims 9, 13, and 30-31 are rejected as "unpatentable over Andrew". The Applicant believes the Examiner is referring to U.S. Patent No. 6,061,456 to Andrea, et al ("the '456 patent"), however, no specific reference to a patent number was provided. If the Examiner is rejecting the claims under a different patent or reference, the Applicant respectfully requests clarification and the opportunity to respond to the rejection once the full citation is provided.

Applicant respectfully submits that the instant application is in condition for allowance. Should the Examiner believe that a conversation with Applicant's representative would be useful in the prosecution of this case, the Examiner is invited and encouraged to call Applicant's representative.

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Respectfully submitted,

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